

What is claimed is:

1. A method of creating a permeable resinous mass comprising the steps of:
selecting an interval along a well bore;
placing a resin slurry comprising an acid curable resin, filler, and degradable material into the selected interval; and,
activating the acid curable resin using an activator wherein the activation causes the acid curable resin to substantially cure and aids in degrading the degradable material.
2. The method of claim 1 wherein the acid curable resin in the resin slurry comprises a furan-based resin, a phenolic-based resin, a phenol/phenol formaldehyde/furfuryl alcohol resin, or a combination thereof.
3. The method of claim 2 wherein the furan-based resin comprises a furfuryl alcohol resin; a mixture furfuryl alcohol resins and aldehydes; or a mixture of furan resins and phenolic resins.
4. The method of claim 3 wherein the furan-based resin further comprises a solvent and wherein the solvent is 2-butoxy ethanol, butyl lactate, butyl acetate, tetrahydrofurfuryl methacrylate, tetrahydrofurfuryl acrylate, an esters of oxalic acid, an ester of maleic acid, an ester of succinic acid, furfuryl acetate, or combinations thereof.
5. The method of claim 2 wherein the phenolic-based resin comprises a terpolymer of phenol, a phenolic formaldehyde resin, or a mixture of phenolic and furan resins.
6. The method of claim 5 wherein the phenolic-based resin further comprises a solvent and wherein the solvent is butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or combinations thereof.
7. The method of claim 2 wherein the phenol/phenol formaldehyde/furfuryl alcohol resin comprises from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, and from about 10 to about 40% furfuryl alcohol.
8. The method of claim 1 wherein the resin slurry further comprises a silane coupling agent.

9. The method of claim 8 wherein the silane coupling agent comprises N-2-(aminoethyl)-3-aminopropyltrimethoxysilane, 3-glycidoxypopyltrimethoxysilane, or n-beta-(aminoethyl)-gamma-aminopropyl trimethoxysilane.

10. The method of claim 8 wherein the silane coupling agent is present in the resin slurry in an amount ranging from about 0.1% to about 3% by weight of the resin in the resin slurry.

11. The method of claim 1 wherein the resin slurry further comprises a surfactant.

12. The method of claim 11 wherein the surfactant is present in the resin slurry in an amount ranging from about 2% to about 15% by weight of the resin in the resin slurry.

13. The method of claim 1 wherein the acid curable resin is present in the resin slurry in an amount ranging from about 3% to about 70% by weight of the resin slurry.

14. The method of claim 1 wherein the filler in the resin slurry comprises sand, proppant, gravel, ground walnut hulls, polymer particles, microspheres, glass particles, ceramic particles, silica particles, carbon black powder, rubber particles, and combinations thereof.

15. The method of claim 1 wherein the filler is present in the resin slurry in an amount ranging from about 5% to about 50% by weight of the resin slurry.

16. The method of claim 1 wherein the degradable material in the resin slurry comprises a degradable polymer, a dehydrated salt, or a combination thereof.

17. The method of claim 1 wherein the degradable material comprises a substantially water insoluble esters, an ortho ester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); an anhydride; a poly(anhydride); a poly(amino acid); a polysaccharide; a dextran; a cellulose; a chitin; a chitosan; a protein; an aliphatic polycarbonate; a poly(ethylene oxide); a polyphosphazene; a particulate solid anhydrous borate material; an anhydrous sodium tetraborate; an anhydrous boric acid; or combinations thereof.

18. The method of claim 1 wherein the degradable material is present in the resin slurry in an amount ranging from about 1% to about 50% by weight of the resin slurry.

19. The method of claim 1 wherein the activator comprises a gas generating charge that is comprised mainly of a slow burning and nondetonating propellant.

20. The method of claim 19 wherein the nondetonating propellant comprises modified nitrocellulose, nitroamine, or a composite material comprising ammonium perchlorate and a rubberized binder.

21. A method of sand control in a subterranean formation comprising the steps of:

selecting an interval along a well bore;

placing a resin slurry comprising an acid curable resin, filler, and degradable material into the selected interval; and,

activating the acid curable resin using an activator wherein the activation causes the acid curable resin to substantially cure and aids in degrading the degradable material.

22. The method of claim 21 wherein the acid curable resin in the resin slurry comprises a furan-based resin, a phenolic-based resin, a phenol/phenol formaldehyde/furfuryl alcohol resin, or a combination thereof.

23. The method of claim 22 wherein the furan-based resin comprises a furfuryl alcohol resin; a mixture furfuryl alcohol resins and aldehydes; or a mixture of furan resins and phenolic resins.

24. The method of claim 23 wherein the furan-based resin further comprises a solvent and wherein the solvent is 2-butoxy ethanol, butyl lactate, butyl acetate, tetrahydrofurfuryl methacrylate, tetrahydrofurfuryl acrylate, an esters of oxalic acid, an ester of maleic acid, an ester of succinic acid, furfuryl acetate, or combinations thereof.

25. The method of claim 22 wherein the phenolic-based resin comprises a terpolymer of phenol, a phenolic formaldehyde resin, or a mixture of phenolic and furan resins.

26. The method of claim 25 wherein the phenolic-based resin further comprises a solvent and wherein the solvent is butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or combinations thereof.

27. The method of claim 22 wherein the phenol/phenol formaldehyde/furfuryl alcohol resin comprises from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, and from about 10 to about 40% furfuryl alcohol.

28. The method of claim 21 wherein the resin slurry further comprises a silane coupling agent.

29. The method of claim 28 wherein the silane coupling agent comprises N-2-(aminoethyl)-3-aminopropyltrimethoxysilane, 3-glycidoxypropyltrimethoxysilane, or n-beta-(aminoethyl)-gamma-aminopropyl trimethoxysilane.

30. The method of claim 28 wherein the silane coupling agent is present in the resin slurry in an amount ranging from about 0.1% to about 3% by weight of the resin in the resin slurry.

31. The method of claim 21 wherein the resin slurry further comprises a surfactant.

32. The method of claim 31 wherein the surfactant is present in the resin slurry in an amount ranging from about 2% to about 15% by weight of the resin in the resin slurry.

33. The method of claim 21 wherein the acid curable resin is present in the resin slurry in an amount ranging from about 3% to about 70% by weight of the resin slurry.

34. The method of claim 21 wherein the filler in the resin slurry comprises sand, proppant, gravel, ground walnut hulls polymer particles, microspheres, glass particles, ceramic particles, silica particles, carbon black powder, rubber particles, and combinations thereof.

35. The method of claim 21 wherein the filler is present in the resin slurry in an amount ranging from about 5% to about 50% by weight of the resin slurry.

36. The method of claim 21 wherein the degradable material in the resin slurry comprises a degradable polymer, a dehydrated salt, or a combination thereof.

37. The method of claim 21 wherein the degradable material comprises a substantially water insoluble esters, an ortho ester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); an anhydride; a poly(anhydride); a poly(amino acid); a polysaccharide; a dextran; a cellulose; a chitin; a chitosan; a protein; an aliphatic polycarbonate; a poly(ethylene oxide); a polyphosphazene; a particulate solid anhydrous borate material; an anhydrous sodium tetraborate; an anhydrous boric acid; or combinations thereof.

38. The method of claim 21 wherein the degradable material is present in the resin slurry in an amount ranging from about 1% to about 50% by weight of the resin slurry.

39. The method of claim 21 wherein the activator comprises a gas generating charge that is comprised mainly of a slow burning and nondetonating propellant.

40. The method of claim 39 wherein the nondetonating propellant comprises modified nitrocellulose, nitroamine, or a composite material comprising ammonium perchlorate and a rubberized binder.

41. A method of producing hydrocarbons through a permeable resinous mass comprising the steps of:

selecting an interval along a well bore in a producing subterranean formation;

placing a resin slurry comprising an acid curable resin, filler, and degradable material into the selected interval; and,

activating the acid curable resin using an activator wherein the activation causes the acid curable resin to substantially cure, the degradable material to substantially degrade, and forms the permeable resinous mass;

producing hydrocarbons from the subterranean formation through the permeable resinous mass.

42. The method of claim 41 wherein the acid curable resin in the resin slurry comprises a furan-based resin, a phenolic-based resin, a phenol/phenol formaldehyde/furfuryl alcohol resin, or a combination thereof.

43. The method of claim 42 wherein the furan-based resin comprises a furfuryl alcohol resin; a mixture furfuryl alcohol resins and aldehydes; or a mixture of furan resins and phenolic resins.

44. The method of claim 43 wherein the furan-based resin further comprises a solvent and wherein the solvent is 2-butoxy ethanol, butyl lactate, butyl acetate, tetrahydrofurfuryl methacrylate, tetrahydrofurfuryl acrylate, an esters of oxalic acid, an ester of maleic acid, an ester of succinic acid, furfuryl acetate, or combinations thereof.

45. The method of claim 44 wherein the phenolic-based resin comprises a terpolymer of phenol, a phenolic formaldehyde resin, or a mixture of phenolic and furan resins.

46. The method of claim 45 wherein the phenolic-based resin further comprises a solvent and wherein the solvent is butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or combinations thereof.

47. The method of claim 42 wherein the phenol/phenol formaldehyde/furfuryl alcohol resin comprises from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, and from about 10 to about 40% furfuryl alcohol.

48. The method of claim 41 wherein the resin slurry further comprises a silane coupling agent.

49. The method of claim 48 wherein the silane coupling agent comprises N-2-(aminoethyl)-3-aminopropyltrimethoxysilane, 3-glycidoxypentyltrimethoxysilane, or n-beta-(aminoethyl)-gamma-aminopropyl trimethoxysilane.

50. The method of claim 48 wherein the silane coupling agent is present in the resin slurry in an amount ranging from about 0.1% to about 3% by weight of the resin in the resin slurry.

51. The method of claim 41 wherein the resin slurry further comprises a surfactant.

52. The method of claim 51 wherein the surfactant is present in the resin slurry in an amount ranging from about 2% to about 15% by weight of the resin in the resin slurry.

53. The method of claim 41 wherein the acid curable resin is present in the resin slurry in an amount ranging from about 3% to about 70% by weight of the resin slurry.

54. The method of claim 41 wherein the filler in the resin slurry comprises sand, proppant, gravel, ground walnut hulls, polymer particles, microspheres, glass particles, ceramic particles, silica particles, carbon black powder, rubber particles, and combinations thereof.

55. The method of claim 41 wherein the filler is present in the resin slurry in an amount ranging from about 5% to about 50% by weight of the resin slurry.

56. The method of claim 41 wherein the degradable material in the resin slurry comprises a degradable polymer, a dehydrated salt, or a combination thereof.

57. The method of claim 41 wherein the degradable material comprises a substantially water insoluble esters, an ortho ester; a poly(orthoester); an aliphatic polyester; a lactide, a poly(lactide); a glycolide; a poly(glycolide); a poly(ϵ -caprolactone); a poly(hydroxybutyrate); an anhydride; a poly(anhydride); a poly(amino acid); a polysaccharide; a dextran; a cellulose; a chitin; a chitosan; a protein; an aliphatic polycarbonate; a poly(ethylene oxide); a polyphosphazene; a particulate solid anhydrous

borate material; an anhydrous sodium tetraborate; an anhydrous boric acid; or combinations thereof.

58. The method of claim 41 wherein the degradable material is present in the resin slurry in an amount ranging from about 1% to about 50% by weight of the resin slurry.

59. The method of claim 41 wherein the activator comprises a gas generating charge that is comprised mainly of a slow burning and nondetonating propellant.

60. The method of claim 59 wherein the nondetonating propellant comprises modified nitrocellulose, nitroamine, or a composite material comprising ammonium perchlorate and a rubberized binder.